

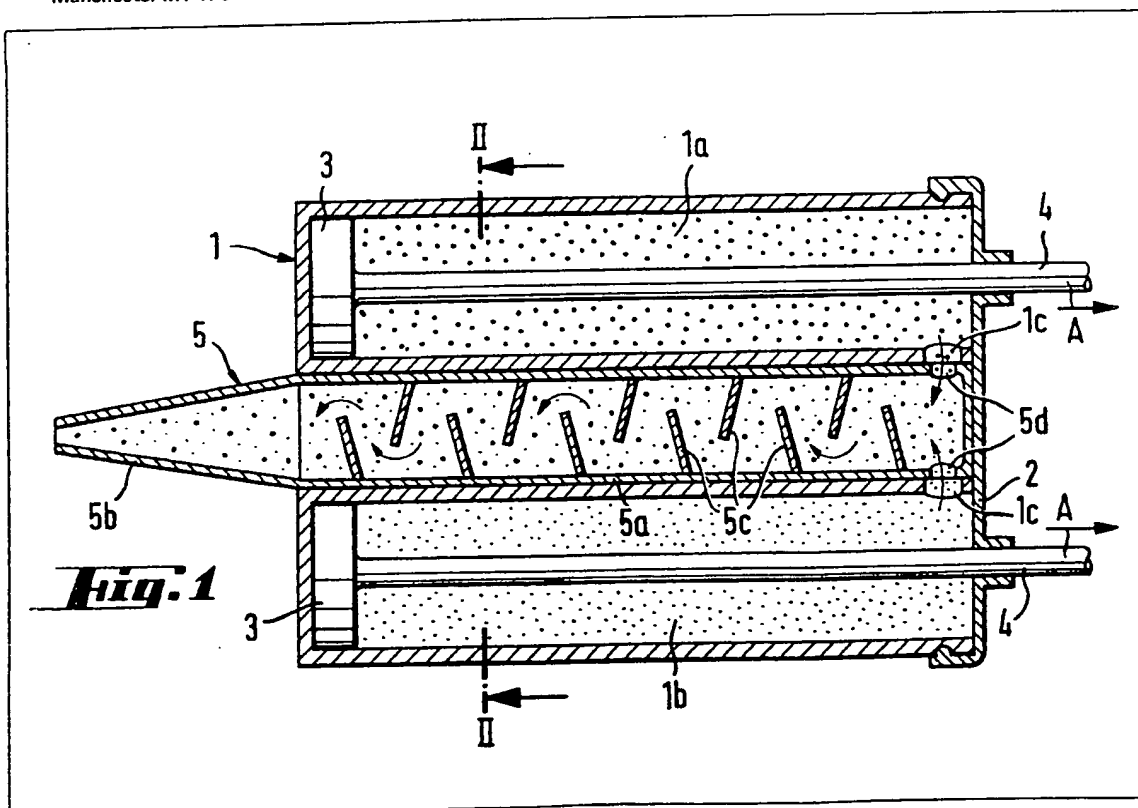
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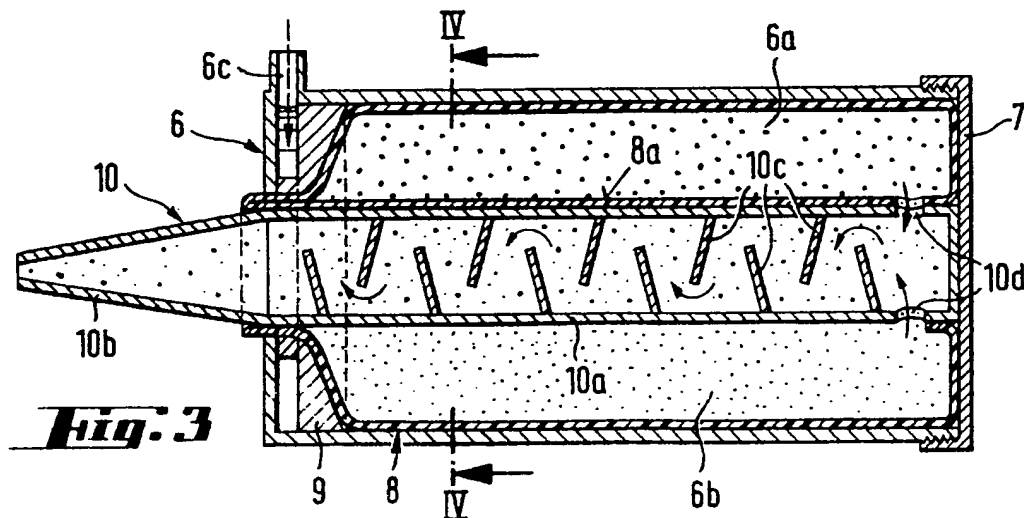
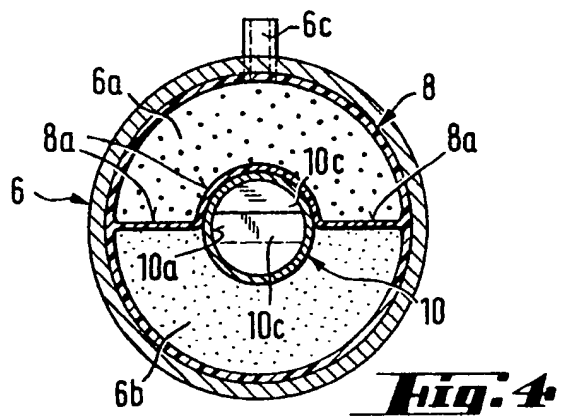
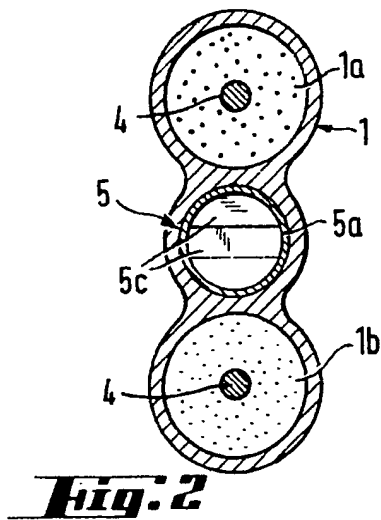
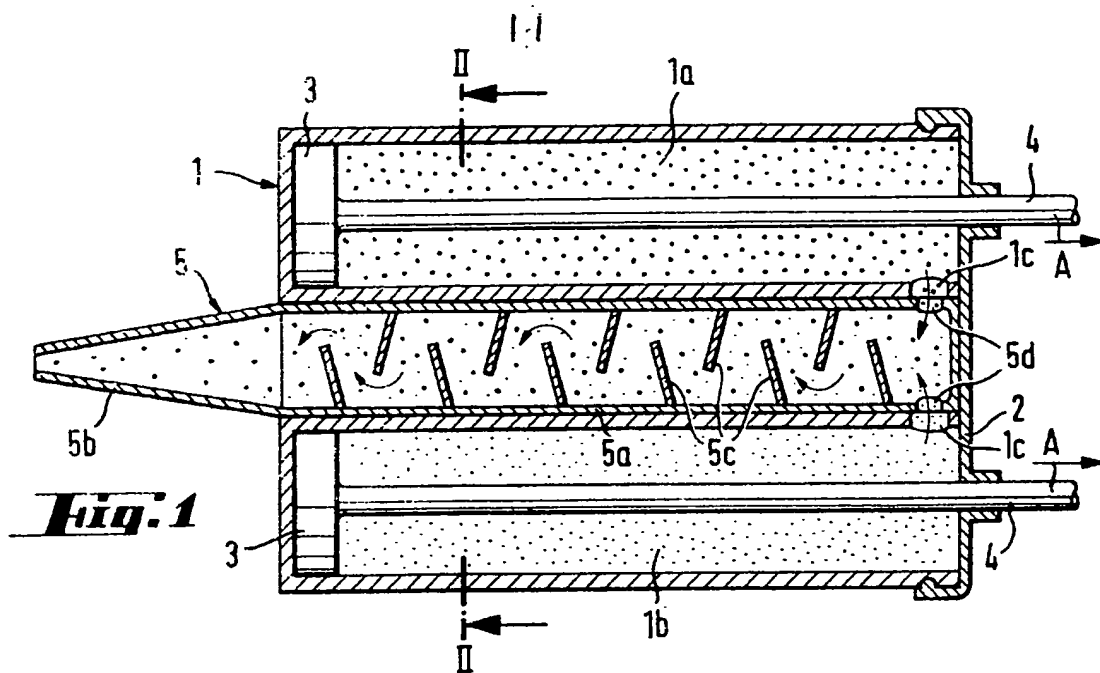
(54) A tool for mixing and dispensing multi-component compositions

(57) A dispensing nozzle 5, of the tool, has a dispensing mouthpiece 56 and a mixing chamber 5a which lies within a storage container 1. The storage container 1 defines separate compartments 1a, b for the components of the composition. Pistons 3 in compartments 1a, 1b are

actuated to force the components from compartments 1a, 1b through respective apertures 1c, 5d into the mixing chamber. The compartments are parallel with the nozzle between them. Alternatively, the container is cylindrical with sector-like compartments divided by a partition of a surrounding bag. The bag is squeezed by a ring operated by gas pressure. The dividing wall supports the nozzle.



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SPECIFICATION

A tool for mixing and dispensing multi-component compositions

This invention relates to a tool for mixing and
5 dispensing e.g. in dosed amounts, multi-
component compositions such as adhesive,
sealing compositions or filling compositions, such
tool comprising a storage container having
compartments for the separate storage of the
10 components of the compositions, and a
dispensing nozzle communicating with the storage
container and having a mixing part, a mouthpiece
communicating with the mixing part in a
composition dispensing direction of the tool.

15 Various tools are known for processing multi-
component compositions of a kind with which the
present invention is concerned. In the simplest of
these known tools the components are dispensed
by the tool in dosed amounts and have to be
20 mixed with one another by some separate means
at the place of use, for example in a borehole. This
procedure is very complex and, depending on the
position and accessibility of the place in which the
tool is used, it involves overcoming manifold
25 problems. Moreover, an adequate mixing of the
components is not guaranteed.

In another known tool, the components are
mixed with one another in a storage container of
the tool, this mixing entailing the destruction of
30 dividing walls forming compartments in the
storage container, and then dispensed in dosed
amounts. This tool permits a good intermixing of
the components. The essential disadvantage of
this tool is that the various components have to be
35 processed into the composition within the
relatively short period of time.

Furthermore, it is known to feed the
components, stored in separate compartments, to
a dispensing nozzle which is associated with the
40 tool. The dispensing nozzle usually consists of a
mixing part and a mouthpiece which
communicates with the mixing part in the
composition dispensing direction of the tool. The
mixing part contains baffle plates which serve to
45 deflect the flow of the components and therefore
bring about an intensive mixing of the components
as they flow through the mixing part. This tool has
proved successful in principle. One of its
disadvantages is its very large overall length,
50 which is brought about by the need for the
dispensing nozzle to communicate with the
storage container. Therefore the handling of this
tool is made considerably more difficult.

An object of the invention is to provide a tool,
55 for mixing and dispensing e.g. in dosed amounts,
multi-component compositions, which has a
compact construction and thereby has good
handling characteristics.

In accordance with the present invention, this
60 object is achieved in that the mixing part is
arranged inside the storage container.

As a result of the arrangement of the mixing
part inside the storage container, the overall
length of the tool can be shortened considerably.

65 The compact construction of the tool facilitates its
handling.

The mixing part can be arranged in any desired
position inside the storage container. To achieve a
mixing part having an overall length which is as
70 great and thus effective as possible, it is
advantageous for the mixing part to be arranged in
axially-parallel manner with regard to the storage
container. As a result of such an arrangement of
the mixing part and the storage container the
75 entire length of the storage container can act as a
mixing path. This results in a good mixture of the
components right up until the components
emerge from the mouthpiece.

In order to permit a uniform and good supply of
80 the components to the mixing part, it is
advantageous for the mixing part to be arranged
centrally inside the storage container. The central
arrangement of the mixing part results in short
connection paths between the mixing part and the
85 compartments of the storage container. By the
provision of cylindrical compartments of the
storage container which are arranged parallel to
one another, the mixing part may be arranged
between the compartments. In the case of a
90 cylindrical storage container, the mixing part may
be arranged coaxially. The compartments of the
storage container may then surround the mixing
part in a sector-shaped manner.

As with known tools which are preferably
95 intended to process the entire amount of
composition all at once, in the tool of the present
invention the wall of the mixing part
advantageously forms part of the wall of the
compartments of the storage container.

100 Since, when processing multi-component
compositions, occasional interruptions in the
working of the tool occur which last longer than
the pot time, that is to say the time during which
the mixed components are able to be processed,
105 this can lead to the mixing part being rendered no
longer capable of being used and therefore it has
to be replaced. In such an event, in order to be
able to process further the components still
present in the compartments of the storage
110 container, the wall of the mixing part is
advantageously surrounded by the walls of the
compartments of the storage container. As a
result of this arrangement, to replace the mixing
part it can simply be drawn out of the storage
115 container and replaced by a new one.

The invention will be described further, by way
of example, with reference to the accompanying
drawings in which:

Fig. 1 is a longitudinal section illustrating a first
120 preferred embodiment of the tool of the invention;

Fig. 2 is a section through the tool of Fig. 1,
taken along the line II—II;

Fig. 3 is a longitudinal section illustrating a
second preferred embodiment of the tool of the
125 invention; and

Fig. 4 is a section through the tool, of Fig. 3,
taken along the line IV—IV.

Referring firstly to Figs. 1 and 2 the illustrated
first embodiment of the tool conforming to the

invention for mixing and dispensing a multi-component composition comprises a storage container which is designated as a whole by the reference numeral 1. The storage container 1 contains, in two separate compartments 1a, 1b, respective components of a multi-component composition. The storage container 1 is closed at its rearward end by a lid 2. Pistons 3 are arranged respectively in the compartments 1a, 1b of the container 1. Each piston 3 is connected to a piston rod 4 to enable the piston 3 to be moved in the direction indicated by the arrows A by means of a respective transportation mechanism, connected to a respective piston rod 4, which is known 'per se' and which is therefore not shown. When the pistons 3 are moved in the direction indicated by the arrows A the components contained in the compartments 1a, 1b are expelled therefrom through outlet apertures 1c in respective walls of the compartments 1a, 1b.

A dispensing nozzle 5 is arranged between the compartments 1a, 1b. The dispensing nozzle 5 consists of a mixing part 5a and a mouthpiece 5b communicating with the mixing part 5a in a composition dispensing direction of the tool. The mixing part 5a is arranged inside the storage container 1 and is removable therefrom. In its rearward region, the mixing part 5a has inlet apertures 5d which are so arranged that when the mixing part 5 is pushed into the storage container 1 so that it butts against the lid 2 the apertures 5d can be aligned with the apertures 1c. This enables the components expelled from the compartments 1a, 1b to come into contact with one another in the mixing part 5a. The mixing part 5a contains baffle plates 5c which bring about a deflection of the component flow and thereby an extensive mixing of the components.

As shown in Fig. 2 the compartments 1a, 1b, of the storage container 7 lie side-by-side with the dispensing nozzle 5 lying therebetween. The baffle plates 5c are evident in the dispensing nozzle 5. The wall of the mixing part 5a is partially surrounded by a part of the walls of the compartments 1a, 1b, of the storage container 1.

Referring now to Figs. 3 and 4 the illustrated second embodiment of the tool conforming to the invention comprises a storage container which is circular in cross-section, which is designated as a whole by reference numeral 6 and which contains, in separate compartments 6a, 6b, components of a multi-component composition. Arranged in the storage container 6, which is closed at its rearward end by a lid 7, is a bag 8 made from a flexible material accommodating the components. The bag 8 has a dividing wall 8a which prevents premature contact of the two components. The wall 8a of the bag 8 extends over part of a wall of

a dispensing nozzle 10 which is arranged centrally in the storage container 6. The dispensing nozzle 10 comprises a mixing part 10a and a mouthpiece 10b communicating with the mixing part 10a in a composition dispensing direction of the tool. The mixing part 10a is therefore disposed in the compartment 6b inside the bag 8. The mixing part 10a serves, in this respect, on the one hand, as support for the dividing wall 8a and, on the other hand, as a part of the wall of the compartment 6b.

The bag 8 can be squeezed with the aid of a squeezing ring 9 which is guided in the storage container 6. The actuation of the squeezing ring 9 may be effected, for example, by feeding a pressure medium such as compressed air or CO₂, in one end of the storage container 6. The components expelled from the bag 8 by the squeezing ring 9 pass through inlet apertures 10d into the mixing part 10a. In the mixing part 10a, the components are mixed together, upon flowing through, with the aid of baffle plates 10c contained therein.

Instead of a bag having a dividing wall 8a, however, also two or more bags separated from one another can be used, which bags surround the mixing part 10a in sector-shaped manner.

85 CLAIMS

1. A tool for mixing and dispensing e.g. in dosed amounts, multi-component compositions such as adhesive, sealing compositions or filling compositions, said tool comprising a storage container having compartments for the separate storage of the components of the compositions, and a dispensing nozzle communicating with the storage container and having a mixing part, a mouthpiece communicating with the mixing part in a composition dispensing direction of the tool, characterised in that the mixing part is arranged inside the storage container.

2. A tool as claimed in claim 1, characterised in that the mixing part is arranged in axially-parallel manner with regard to the storage container.

3. A tool as claimed in claim 1 or 2, characterised in that the mixing part is arranged centrally inside the storage container.

4. A tool as claimed in claim 1, 2 or 3, characterised in that a wall of the mixing part forms a part of a wall of the compartments of the storage container.

5. A tool as claimed in any preceding claim characterised in that a wall of the mixing part is surrounded by walls of the compartments of the storage container.

6. A tool for mixing and dispensing multi-component compositions substantially as hereinbefore described with reference to and as illustrated in Figs. 1 and 2, or in Figs. 3 and 4.